

WELL HISTORY REPORT

CHEVRON SOBC WM BIRCH YL E-53

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MARCH 20, 1972


  
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Project Manager

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SECTION I - SUMMARY OF WELL DATA

(a) Well Name and Number

Chevron SOBC WM Birch YT E-53

(b) Permittee, Licensee or Lessee

Western Minerals Limited

(c) Name of Operator

Chevron Standard Limited  
400 Fifth Avenue S.W.  
Calgary 1, Alberta

(d) Location

Unit E, Section 53, Grid 66<sup>W</sup>-10-136-45

(e) Coordinates

Latitude: 66° 02' 21" N; Longitude: 136° 56' 05" W  
Note: See amendment of January 10, 1972.

(f) Permit or Lease Number

Permit No. 3366

(g) Drilling Contractor

G.P. Drilling Ltd., Rotary Rig #14

(h) Drilling Authority

No. 564, issued December 9, 1971

(i) Classification

Wildcat

(j) Elevations

Ground elevation - 2,025.4 K.B. elevation - 2,038.5'

(k) Spudded

12:30 hours, January 20, 1972

(l) Completed Drilling

17:00 hours, February 14, 1972

(m) T.D. and P.B.T.D.

T.D. - 2,245; P.B.T.D. - Surface

(n) Well Status

Dry and permanently abandoned

(o) Rig Release Date

15:00 hours, February 21, 1972

(p) Hole Sizes to Total Depth

30" hole from surface to 61' K.B.

12-1/4" hole from 61' to 737'

8-3/4" hole from 737' to 2,245;

(q) Casing

19" O.D. conductor pipe set at 61' K.B.

9-5/8", J-S, 36# casing set at 733' K.B.

(r) Engineers - L. F. Grumbley, J. Charleston, P. Pandachuck  
Geologists - O. Gietz, D. Clark

SECTION II - GEOLOGICAL SUMMARY

a) Formation Tops

<u>Formation</u>	<u>Elevation</u> K.B. 2038.5'	<u>Depth</u>	
		<u>Sample Tops</u>	<u>Log Tops</u>
Orange Marker	1608.5'	-	430'
Basal Cretaceous	710.5'	-	1328'
Permian Sandstone	684.5'	1324'	1354'
Pennsylvanian Siltstone	-51.5'	1990'	2090'
TOTAL DEPTH	2245' (-206.5')		

b) Cored Intervals

	<u>Interval</u>	<u>Formation</u>	<u>Recovery</u>
Core #1	1331' - 1340'	Cretaceous	9.0'
Core #2	1340' - 1368'	Cretaceous/Permian	28.0'
Core #3	1368' - 1374'	Permian	4.0'
Core #4	1426' - 1430'	Permian	3.5'
Core #5	1511' - 1513'	Permian	-
Core #6	1620' - 1677'	Permian	44.0'
Core #7	1807' - 1830'	Permian	22.4'

c) Core Descriptions

Core #1 : 1331'-1340' Rec. 9'

Coring Times: 10, 34, 23, 21, 8, 14, 26, 19, 34  
Core jammed.

Core Description

1331 - 1340:  
9.0 Chert grit, pale grey to white, well rounded chert grains, minor dark grey chert grains. Matrix varies from siliceous clay to silty and sandy. Much medium to coarse quartz sand grains. Streaks and thin beds of very fine to fine grained brown siliceous sandstone. Irregular slumped bedding partings of dark brown silty shale and siltstone, coaly partings, plant remains, patchy segregations of pyrite. Dip of bedding - 5° near top of core, 45° at base. Streaks and patches of fair intergranular porosity, about 20% of interval. Porosity shows oil stain, cut and fluorescence.

Core #2 : 1340'-1368' Rec. 28' Bit Damaged

Coring Times: 4, 3, 2, 8, 10, 12, 12, 13, 17, 14,  
14, 9, 14, 9, 10, 23, 25, 8, 17, 12,  
6, 7, 6, 13, 20, 7, 8, 10

Core Description

- 1340 - 1352.7: Chert grit, grey-brown and grey, few dark grey sub-  
12.7 rounded chert pebbles up to 2.0 cm. in a sandy, silty  
matrix, argillaceous, siliceous cement. Irregularly  
interbedded brown, argillaceous siltstone and sand-  
stone. Few coal partings. Dips irregular, steep.  
Streaks of poor to fair porosity in coarse beds -  
about 20% of interval. Trace of cut, fluorescence.
- 1352.7 - 1362.0: Sandstone, pale grey, medium to coarse grained, matrix  
9.3 to pale grey and white chert pebbles up to 5 mm. Sand-  
stone is well rounded grey and light grey chert, minor  
subangular quartz grains, siliceous cement. Traces to  
poor intergranular porosity, no stain. Fair cut,  
fluorescence.
- 1362.0 - 13<sup>6</sup>48.0: Sandstone, pale grey - subrounded chert, subangular  
6.0 quartz grains, medium to coarse grained. Scattered  
thin (1 foot) beds of chert gravel conglomerate.  
Friable, good porosity, permeability. Fair cut,  
fluorescence.

Gas reading increased during lower 6' of core. No  
flame at end of blooey line. No evidence of water.

Running in with smaller core barrel for Core #3.

\*Core bit grooved concentric along crown.

Core #3 : 1368'-1374' Rec. 4'

Coring Times: 7, 13, 5, 9, 20, 18  
Bit damaged.

Core Description

- 1368 - 1368.3: Chert conglomerate, light grey and grey, subrounded  
0.3 chert pebbles, up to 2 cm. in coarse chert-quartz  
sandstone matrix. Good intergranular porosity. Fair  
fluorescence, cut.
- 1368.3 - 1369.3: Sandstone, grey, medium to coarse grained. Pale grey  
1.0 and grey chert grains, subrounded, subangular grey  
quartz grains, fair sorting, siliceous cement, second-  
ary quartz crystal facies. Good intergranular porosity.  
Questionable stain. Fluorescence, cut in CCl<sub>4</sub>.
- 1369.3 - 1372.0: Chert conglomerate - pale grey, grey, few dark grey  
2.7 chert pebbles, up to 2 cm. in coarse sandstone matrix,  
siliceous cement. Friable. Good intergranular porosity.  
Questionable stain. Faint cut and fluorescence in CCl<sub>4</sub>.

1372 - 1374: Core not recovered.  
2.0

\*Core bit grooved concentrically on crown.  
No flame at end of discharge line.  
No evidence of water.

Core #4 : 1426'-1430' Rec. 3.5'

Coring Times: 15, 10, 23, 17

Core Description

1426 - 1427: Sandstone, grey, medium grained, subangular quartz,  
1.0 subrounded chert grains, fairly well sorted, siliceous  
cement. Fair intergranular porosity, cut and fluorescence.

1427 - 1428.3: Chert grit conglomerate - white, grey and dark grey,  
1.3 rounded chert pebbles in coarse, sandy matrix. Siliceous  
cement. Fair intergranular porosity, trace of cut and  
fluorescence.

1428.3 - 1429.5: Sandstone, grey, medium grained, scattered coarse quartz  
1.2 and chert grains, fair sorting, subangular, noncalcareous.  
Siliceous cement, sand is friable. Fair intergranular  
porosity, slight cut and fluorescence.

1429.5 - 1430: Core not recovered.  
0.5

Core #5 : 1511'-1513' No recovery

Coring Times: 10, 12, -

Core #6 : 1620'-1677' Rec. 44'

Coring Times: 32, 7, 12, 9, 12, 22, 31, 21, 30, 25,  
16, 19, 13, 15, 15, 12, 15, 15, 6, 5,  
5, 5, 5, 6, 5, 8, 16, 16, 17, 29,  
28, 21, 19, 24, 21, 19, 22, 20, 21, 22,  
25, 20, 20, 23, 18, 19, 20, 20, 19, 20,  
19, 13, 8, 8, 6, 6, 5

Core Description

1620 - 1630: Shale, grey and sandstone, grey, medium grained,  
10.0 interbedded 50/50, sandstone has poor porosity with  
occasional oil cut and fluorescence.

1630 - 1637: Shale, grey, silty with sandy stringers.  
7.0

- 1637 - 1639: Sandstone, grey, fine grained, poor porosity,  
2.0 occasional oil cut and fluorescence.
- 1639 - 1646: Chert conglomerate, fair porosity, trace brown oil  
7.0 stain, oil cut and fluorescence.
- 1646 - 1649: Chert conglomerate, with silty interbeds.  
3.0
- 1649 - 1663: Shale, grey, with silty stringers.  
14.0
- 1663 - 1664: Sandstone, grey, medium to coarse grained, good  
1.0 porosity, fair cut and fluorescence.
- 1664 - 1677: Lost core.  
13.0

Core #7 : 1807'-1830' Rec. 22.4'

Coring Times: 22, 25, 22, 17, 13, 14, 16, 15, 15, 18,  
18, 33, 41, 20, 19, 27, 27, 33, 18, 21,  
23, 28, 42 - Core jammed.

Core Description

- 1807 - 1809.3: Shale, grey, blocky, silty, noncalcareous. Scattered  
2.3 sand grains.
- 1809.3 - 1811.3: Sandstone, light grey, fine to medium grained, non-  
2.0 calcareous, glauconitic, slightly argillaceous. Fairly  
well sorted subangular chert and quartz grains, sili-  
ceous cement. Scattered bands of coarse chert pebble  
conglomerate.
- 1809.3-1810.3 Tight
- Fair intergranular porosity, 1810.3-1811.3, no stain,  
fluorescence or cut.
- 1811.3 - 1817.7: Sandstone, grey, medium to coarse grained, scattered  
6.4 chert grit. Subangular quartz, subrounded pale grey  
and grey chert grains, glauconitic, siliceous, non-  
calcareous matrix. Good intergranular porosity, no  
stain, fluorescence or cut. Streaks of bitumen infilled  
porosity.
- 1817.7 - 1820.3: Chert conglomerate, rounded, grey chert pebbles in a  
2.6 medium to coarse grained glauconitic sandstone matrix.  
Good intergranular porosity, no stain, cut or fluorescence.

- 1820.3 - 1824.3: Sandstone, grey, medium grained, glauconitic. Abundant  
4.0 chert grit, noncalcareous. Subangular quartz, sub-  
rounded chert grains, siliceous cement. Calcareous in  
lower 0.7 feet. Good intergranular porosity, no stain,  
cut or fluorescence.
- 1824.3 - 1824.8: Sandstone, light grey, fine grained, glauconitic, well  
0.5 sorted, subangular quartz grains, slightly argillaceous  
matrix, calcareous, siliceous. Tight.
- 1824.8 - 1828.8: Shale, grey, hard, blocky, calcareous. Scattered chert  
4.0 grit, pyrite. Few large thick shelled pelecypods,  
fossil fragments.
- 1828.8 - 1829.4: Chert grit - dark grey and grey, subrounded fairly well  
0.6 sorted chert grains in pale grey limestone matrix  
approx. 25%.
- 1829.4 - 1830: Core not recovered.  
0.6

d) Sample Descriptions

- 60 - 70: Sandstone, light grey, very fine grained, fairly well  
sorted subangular quartz grains, siliceous, silty  
matrix, noncalcareous, trace micaceous, carbonaceous  
flecks. Much interbedded grey and dark grey silty  
micromicaceous shale. Minor brown siltstone and  
maroon siltstone.
- 70 - 80: As above.
- 80 - 90: As above. Trace of ironstone.
- 90 - 100: Sandstone, as above, becoming fine grained (0.10 mm)
- 100 - 110: As above.
- 110 - 120: No sample.
- 120 - 130: Sandstone, light brown-grey, very fine to fine grained,  
siliceous, silty, argillaceous in part, fair to well  
sorted subangular quartz grains, carbon flecks, trace  
of glauconite. Trace to minor brown silty shale.
- 130 - 140: Sandstone, as above. Much rust-red and maroon silty  
shale and siltstone, interbedded dark grey micromicaceous  
shale.
- 140 - 150: Sandstone, light brown, very fine grained, argillaceous,  
silty, noncalcareous. Fairly well sorted, subangular  
quartz grains. Minor, interbedded grey and dark grey,  
micaceous and silty shale.

- 150 - 160: As above. Trace of fine, silty lamination.
- 160 - 170: Shale, grey and dark grey, subfissile, micromicaceous, noncalcareous. Much sandstone, as above.
- 170 - 180: As above.
- 180 - 190: As above.
- 190 - 200: Shale, grey and dark grey, fissile, micaceous, noncalcareous. Much grey, blocky, silty shale. Traces of pale grey fine grained quartz sandstone.
- 200 - 210: Shale, grey, blocky, silty, noncalcareous. Much brown, silty shale, traces of pale grey and brown fine grained sandstone.
- 210 - 220: Shale, grey, micromicaceous, subfissile, noncalcareous, silty in part. Trace of brown silty shale.
- 220 - 230: As above.
- 230 - 240: Shale, as above.
- 240 - 250: As above. Trace of brown-grey shale.
- 250 - 260: Shale, as above.
- 260 - 270: Shale, grey and dark grey, micromicaceous, noncalcareous, subfissile. Minor pale grey silty streaks and fine grained sandstone, carbonaceous flecks, noncalcareous.
- 270 - 280: Shale, as above. Trace of brown shale.
- 280 - 290: Shale, dark grey, micromicaceous, subfissile, noncalcareous, much dark grey-brown shale. Few silty streaks, trace of grey, very fine grained sandstone.
- 290 - 300: As above.
- 300 - 310: As above.
- 310 - 320: As above.
- 320 - 330: Shale, as above.
- 330 - 340: As above.
- 340 - 350: As above.
- 350 - 360: Shale, as above.

- 360 - 370: As above. Trace of hard, sideritic shale.
- 370 - 380: As above.
- 380 - 390: Shale, as above. Much fissile shale.
- 390 - 410: No sample.
- 410 - 420: Shale, grey and dark grey, subfissile, micromicaceous, noncalcareous. Few silty streaks, hard shale streaks.
- 420 - 430: Shale, as above.
- 430 - 440: Sandstone, grey, medium grained, noncalcareous, slightly argillaceous, coarse grained sandstone streaks. Angular to subangular, fair sorted, quartz and black chert grains, siliceous matrix. Fair to good intergranular porosity, no fluorescence or cut. Much shale, as above.
- 440 - 450: Sandstone, as above. Much dark grey micaceous shale, brown and reddish-brown and maroon shale, silty in part.
- 450 - 460: Sandstone, as above. Trace of coarse sandstone. Porosity, as above. No fluorescence or cut. Much shale, as above.
- 460 - 470: Sandstone, grey, fine grained, argillaceous, noncalcareous, tight. Minor fine grained light brown sandstone, well sorted, subangular quartz grains, noncalcareous, trace of intergranular porosity. Grit and coarse chert sandstone, grey, sideritic cement and fine sandstone matrix - subrounded to rounded pale grey, grey, green and blue-grey chert grit, subangular chert grains. Traces of porosity, heavy cut and fluorescence in chloroethene.
- 470 - 480: Chert grit, as above, sideritic cement, trace of porosity, sandy matrix in part. Minor sandstone, as above. Fluorescence and cut in chloroethene.
- 480 - 490: Shale, dark grey and grey, silty, sandy, blocky, hard, noncalcareous. Traces of coarse sandy streaks. Minor chert grit, as above, medium grained brown sandstone.
- 490 - 500: Shale, grey and dark grey, blocky, micromicaceous, silty streaks, noncalcareous. Trace of ironstone, pyrite.
- 500 - 510: Shale, dark grey, micromicaceous, silty, blocky to subfissile, noncalcareous. Trace of ironstone, pyrite, sideritic shale.

- 510 - 520: Shale, silty, as above.
- 520 - 530: As above.
- 530 - 540: As above. Trace of ironstone.
- 540 - 550: Shale, as above. Minor rust-red shale.
- 550 - 560: Shale, grey and dark grey, silty, micromicaceous, blocky.
- 560 - 570: Shale, as above.
- 570 - 580: As above.
- 580 - 590: As above.
- 590 - 600: As above. Traces of brown shale.
- 600 - 610: Shale, as above. Much brown shale. Traces of brown, fine grained quartz sandstone, traces of chert grit.
- 610 - 620: Shale, dark grey, micromicaceous, silty, noncalcareous. Much brown shale, silty. Traces of ironstone.
- 620 - 630: Shale, as above. Traces of brown and maroon shale.
- 630 - 640: Shale, as above. Sandy streaks.
- 640 - 650: Shale, as above. Light brown silty streaks. Ironstone.
- 650 - 660: As above.
- 660 - 670: As above.
- 670 - 680: Shale, as above. Sandy streaks. Minor brown, blocky shale.
- 680 - 690: Shale, as above. Trace of grey-green nodular shale.
- 690 - 700: Shale, as above. Traces of iron stained, nodular green shale, rusty-red shale. Pyrite.
- 700 - 710: Shale, dark grey, micromicaceous, silty, blocky. Trace of fish scales. Trace of pyrite. Calcareous sandy streaks.
- 710 - 720: Shale, grey, very sandy, grading to very fine, very argillaceous grey sandstone. Trace finely glauconitic, grey, very calcareous, argillaceous sandstone. Trace of pyrite, fish remains.

- 720 - 730: Shale, grey and dark grey, silty, trace sandy limestone streaks. Trace of pyrite, fossil fragments. Minor brown shale.
- 730 - 737: As above. Much brown shale.
- 737 - 750: Shale, pipe cement, lost circulation material.
- 750 - 760: Shale, dark grey, blocky, silty, micromicaceous, noncalcareous.
- 760 - 770: Shale, as above. Trace of pyrite.
- 770 - 780: As above.
- 780 - 790: Shale, as above.
- 790 - 800: Shale, as above. Sandy streaks.
- 800 - 810: Shale, as above. Trace of pyrite, fossil fragments.
- 810 - 820: Shale, as above. Trace of brown-grey blocky, noncalcareous shale. Decrease in silty shale.
- 820 - 830: Shale, as above. Trace of dark brown shale.
- 830 - 840: Shale, as above. Trace of brown shale, pyrite.
- 840 - 850: As above.
- 850 - 860: As above. Minor massive pyrite.
- 860 - 870: Shale, as above. Gray sandy streaks.
- 870 - 880: Shale, as above. Traces of brown ironstone.
- 880 - 890: Shale, as above. Trace of pyrite.
- 890 - 900: As above. Traces of pyrite.
- 900 - 910: Shale, as above. Trace of ironstone.
- 910 - 920: Shale, as above, dark grey, subfissile to blocky, noncalcareous. Trace of ironstone.
- 920 - 930: As above. Trace of pyrite.
- 930 - 940: Shale, as above.
- 940 - 950: As above. Trace of ironstone, pyrite.

950 - 960:	Shale, as above.
960 - 970:	As above.
970 - 980:	As above. Trace of pyrite.
980 - 990:	Shale, as above.
990 - 1000:	As above, trace ironstone, pyrite.
1000 - 1010:	As above.
1010 - 1020:	As above.
1020 - 1030:	Shale, as above.
1030 - 1040:	As above.
1040 - 1050:	As above.
1050 - 1060:	Shale, as above. Trace of ironstone.
1060 - 1070:	As above. Trace of pyrite.
1070 - 1080:	Shale, as above.
1080 - 1090:	As above.
1090 - 1100:	Shale, as above. Trace of ironstone.
1100 - 1110:	As above.
1110 - 1120:	Shale, as above.
1120 - 1130:	Shale, as above. Trace of glauconite.
1130 - 1140:	Shale, grey, blocky to subfissile, micromicaceous, noncalcareous. Trace of black chert pebble streaks.
1140 - 1150:	Shale, as above. Trace of pyrite.
1150 - 1160:	Shale, as above. Trace of ironstone, glauconite. Trace of pale grey bentonite.
1160 - 1170:	Shale, as above. Traces of glauconite, pale grey bentonite.
1170 - 1180:	As above. Traces of brown, argillaceous limestone.
1180 - 1190:	Limestone, brown, argillaceous, dense to very fine crystalline - traces of pyrite, glauconite.

- 1190 - 1200: Limestone, as above. Much shale, dark grey and grey, noncalcareous, blocky, micromicaceous. Trace of pyrite, glauconite.
- 1200 - 1210: Shale, as above. Trace of chert pebbles. Pyrite, bentonite. Trace of grey-green waxy shale.
- 1210 - 1220: Shale, as above. Trace of green waxy shale. Much interbedded dark grey calcareous shale, traces of brown argillaceous limestone. Pyrite.
- 1220 - 1230: As above. Much dark grey fissile, noncalcareous shale. Trace of pyrite, fossils, glauconite.
- 1230 - 1240: Shale, dark grey, micromicaceous, subfissile to blocky, noncalcareous, trace pyrite, glauconite.
- 1240 - 1250: As above.
- 1250 - 1260: Shale, as above. Traces of pyrite. Trace of brown, siliceous siltstone. Trace chert pebbles.
- 1260 - 1270: Shale, as above. Much grey fissile shale. Traces of brown, very fine siliceous sandstone. Traces of pyrite, ironstone, glauconite.
- 1270 - 1280: As above. Trace of fossil fragments.
- 1280 - 1290: Shale, dark grey, micromicaceous, fissile, non-calcareous. Trace of blocky, glauconitic dark grey shale, faintly calcareous.
- 1290 - 1300: Shale, as above. Trace of brown, siliceous siltstone.
- 1300 - 1310: As above. Trace of grey limestone.
- 1310 - 1320: Shale, as above. Trace of chert pebbles. Pyrite.
- 1320 - 1330: Sandstone, pale grey and pale brown, medium to coarse grained - pale grey and grey chert grains, fairly well rounded, in a quartz sand matrix - kaolinitic, siliceous. Poor intergranular porosity. Questionable dead oil stain. Traces of brittle bitumen. Traces of glauconitic, dark grey shale. Slight cut and fluorescence.
- 1330 - 1331: Depth correction.
- 1331 - 1340: Core #1 - Rec. 9.0'
- 1340 - 1368: Core #2 - Rec. 28'

- 1368 - 1374: Core #3 - Rec. 4'
- 1374 - 1380: Cavings
- 1380 - 1390: Cavings  
Sandstone, pale grey, medium to coarse grained, sub-angular quartz and pale grey chert grains, siliceous cement. Scattered pale grey chert pebbles. Secondary quartz. Good intergranular porosity, trace of dead oil stain, slow cut and fluorescence.
- 1390 - 1400: Sandstone, as above. Porosity, cut and fluorescence, as above.
- 1400 - 1410: As above. Porosity, cut and fluorescence as above.
- 1410 - 1420: Sandstone, as above. Porosity, cut and fluorescence as above.
- 1426 - 1430: Core #4 - Rec. 3.5'
- 1430 - 1440: Sandstone, grey, fine to medium grained, quartz, sub-angular, and pale grey and white, rounded chert grains, siliceous cement. Few streaks of chert grit conglomerate. Good intergranular porosity, trace of stain, cut and fluorescence.
- 1440 - 1450: As above. Traces of pyrite. Porosity, cut, fluorescence, as above.
- 1450 - 1460: As above. Much pyrite. Porosity, stain and cut, fluorescence, as above.
- 1460 - 1470: Sandstone, fine to medium grained, subangular quartz, fairly well sorted, scattered pale grey and grey chert grains. Loose grains, no cement.
- 1470 - 1480: As above.
- 1480 - 1510: Depth correction - error in tally. Error occurs between 1430 and 1510 feet.
- 1510 - 1513: Core #5 - No recovery.
- 1513 - 1520: Sandstone, grey, fine and medium grained, scattered grey and dark grey chert pebbles, coarse sandstone streaks, subangular, fair sorting. Trace of grey, pyritic siltstone. Fair intergranular porosity. Cut and fluorescence in CCl<sub>4</sub>.
- 1520 - 1530: As above.

- 1530 - 1540: As above. V.P.S. Much shale - caving.
- 1540 - 1550: As above. V.P.S.
- 1550 - 1560: Sandstone, grey, coarse grained ( $\leq .1$  mm), sub-angular to subrounded quartz and chert grains, pyrite cement in part - friable, much loose grains. Good porosity, questionable cut and fluorescence.
- 1560 - 1570: No sample.
- 1570 - 1580: Sandstone, grey, medium to coarse grained, sub-angular quartz, subrounded chert grains, siliceous cement, pyrite. Much loose grains. Fair to good porosity, questionable cut and fluorescence.
- 1580 - 1590: As above. Much chert grit.
- 1590 - 1600: Sandstone, grey, medium grained, few streaks of coarse sand and grit. Subangular quartz and chert grains, siliceous, pyrite cement. Much loose grains. Trace of glauconite. Good intergranular porosity. Slight cut and fluorescence.
- 1600 - 1610: As above. V.P.S.
- 1610 - 1620: As above. Much loose quartz and chert grains.
- 1620 - 1677: Core #6 - Rec. 44'
- 1677 - 1680: Sandstone, grey, medium to coarse grained, subangular quartz, subrounded chert grains, siliceous cement. Scattered coarse chert grains. Fair intergranular porosity. Sandstone is friable, chiefly loose grains.
- 1680 - 1690: Chert grit - grey and dark grey, rounded chert grains, minor sandy matrix. Trace of pyrite. Good intergranular porosity - chiefly loose grains. No cut or fluorescence.
- 1690 - 1700: Shale, grey, noncalcareous, silty and sandy, grading in part to argillaceous sandstone. Much chert grit, as above. Pyrite.
- 1700 - 1710: As above. Much chert grit and sandstone.
- 1710 - 1720: Sandstone, light grey, fine grained (0.10 mm), sub-angular, fairly well sorted quartz grains, slightly calcareous to very calcareous, siliceous in part. Trace of glauconite. Trace of grey, argillaceous limestone. Much orange colored chert grit in sandstone matrix. Fair intergranular porosity, very faint cut and fluorescence.

- 1720 - 1730: As above. Much reddish brown and grey chert grit. Trace of pyrite, trace of fossil fragments. Minor grey, blocky shale, silty in part.
- 1730 - 1740: Sandstone, light grey, medium grained, fairly well sorted quartz, pale grey, grey and dark grey chert grains, subangular to subrounded, noncalcareous cement. Good intergranular porosity, faint fluorescence and cut. Minor fine grained sandstone, as above. Much chert grit, shale, as above. Trace of fossil fragments, pyrite.
- 1740 - 1750: Sandstone, light grey, fine grained, siliceous cement, silty, argillaceous matrix, tight. Scattered chert grit pebbles, trace of pyrite.
- 1750 - 1760: Sandstone, grey, medium grained, few coarser streaks, subangular quartz and chert grains, silica cement. Good intergranular porosity, no cut or fluorescence. Minor chert grit. Much grey and dark grey shale, noncalcareous, silty in part.
- 1760 - 1770: Chert grit - subrounded grey, blue grey, pale grey and brown grit, siliceous cement, coarse grey sandy matrix. Good intergranular porosity, faint cut and fluorescence.
- 1770 - 1780: Chert grit, as above. Pyrite. Much pale grey, fine grained siliceous sandstone. Good intergranular porosity, as above, trace of stain, fluorescence, cut.
- 1780 - 1790: Sandstone, grey, fine grained, siliceous, trace of calcareous sandstone, tight. Shale, dark grey, blocky, silty, noncalcareous. Minor chert grit and coarse sandstone - good porosity, traces of oil stain, cut and fluorescence - caving?
- 1790 - 1800: Sandstone, pale grey, fine to medium grained, fairly well sorted, subangular quartz grains. Traces of calcareous, glauconitic pale grey sandstone, traces of echinoid spines, fossil fragments. Traces of coarse chert-quartz sandstone, chert grit - good intergranular porosity, spotty oil stain, cut and fluorescence.
- 1800 - 1805: Sandstone, as above, minor coarse chert-quartz sandstone. Minor dark grey silty, calcareous shale, trace crinoid? fragments. Trace of grey, subfissile, noncalcareous shale.
- 1805 - 1807: Depth correction.

- 1807 - 1830: Core #7 - Rec. 22.4'
- 1830 - 1840: Chert grit, grey and dark grey, subrounded chert in light grey limestone matrix. Traces of pyrite, trace of glauconite. Tight.
- 1840 - 1850: Sandstone, light grey, fine grained, trace glauconite. Very calcareous. Well sorted, subangular quartz, minor grey and dark grey chert grains, in limestone matrix, trace siliceous cement. Tight.
- 1850 - 1860: Sandstone, light grey, fine grained, calcareous, as above. Scattered grey chert grit, approx. 20%. Traces of fossil fragments. Pyrite. Tight.
- 1860 - 1870: Sandstone, as above. Chert grit, as above. Traces of dark grey shale, carbonized plant remains.
- 1870 - 1880: Sandstone, light grey, grey, calcareous, argillaceous, glauconitic, trace of pyrite, much chert grit. Minor grey, sandy silt, slightly calcareous shale, traces of punctate and lamellar fossil fragments.
- 1880 - 1890: As above.
- 1890 - 1900: Sandstone, as above, with interbedded grey silty shale, fossiliferous, spicules, glauconite, pyrite.
- 1900 - 1910: As above. Sandstone grades in part to sandy, pale grey limestone. Trace of ostracods.
- 1910 - 1920: Sandstone, grey, fine grained, glauconitic, argillaceous, very calcareous, grading in part to sandy limestone. Minor interbedded grey and dark grey silty glauconitic, calcareous shale. Trace of fossils, pyrite.
- 1920 - 1930: Shale, grey and dark medium grey, calcareous, silty, few sandy streaks, grading in part to argillaceous limestone. Trace of glauconite, pyrite. Abundant fossil fragments.
- 1930 - 1940: As above.
- 1940 - 1950: As above.
- 1950 - 1960: Shale, dark grey, silty, sandy, noncalcareous to calcareous, trace of glauconite, pyrite. Fossils.
- 1960 - 1970: As above.

- 1970 - 1980: As above. Trace of brown "earthy" shale.
- 1980 - 1990: Shale, brownish-grey, silty, sandy, glauconitic, faintly calcareous. Pyrite.
- 1990 - 2000: As above. Much brown, argillaceous, glauconitic, limestone.
- 2000 - 2010: Shale, as above. Much interbedded brown-grey, argillaceous, calcareous fine grained glauconitic sandstone, trace of dark brown argillaceous limestone. Trace of fossils, pyrite.
- 2010 - 2020: Limestone, brown, argillaceous, silty and sandy in part. Minor interbedded dark brown-grey calcareous and noncalcareous shale. Traces of glauconite, fossil fragments, spicules.
- 2020 - 2030: Shale, dark brown-grey, silty, noncalcareous, to calcareous, glauconitic. Minor brown argillaceous limestone streaks.
- 2030 - 2040: As above. Fossils, spicules.
- 2040 - 2050: Shale, dark grey, silty, noncalcareous, hard. Traces of dark grey-brown calcareous shale.
- 2050 - 2060: Shale, as above. Much interbedded grey-brown shale, and brown argillaceous limestone.
- 2060 - 2070: Sandstone, pale grey and grey, medium grained, sub-angular chert, quartz grains, fairly well sorted, siliceous cement, limestone infilling in part - matrix to abundant rounded chert grit pebbles. Streaks of fair intergranular porosity. No stain, cut or fluorescence.
- 2070 - 2080: Shale, grey and brown-grey, blocky, slightly calcareous, silty in part. Sandstone, pale grey S&P, medium grained, quartz and chert, subangular to sub-rounded, scattered chert grit. Siliceous cement, limey matrix. Traces of good porosity, no cut or fluorescence. Minor light grey, interbedded fossiliferous limestone.
- 2080 - 2090: Limestone, brown-grey, micritic matrix to spicules, shell fragments, sandy in part. Minor interbedded fossiliferous, calcareous shale. Trace of glauconite.

- 2090 - 2100: Shale, dark grey and brown-grey, calcareous, grading in minor part to dark brown very argillaceous limestone. Trace of glauconite.
- 2100 - 2110: Shale, as above. Minor interbedded brown, micritic, fossiliferous limestone, trace of glauconite.
- 2110 - 2120: As above. Interbedded dark grey shale, brown fossiliferous limestone.
- 2120 - 2130: Limestone, brown, argillaceous, micritic, fossiliferous, grading to shale, dark grey, faintly to noncalcareous. Trace of limey sandstone and chert grit.
- 2130 - 2140: Shale, dark brown-grey, silty in part, blocky, slightly calcareous, glauconitic, grading to minor, interbedded brown, micritic fossiliferous, argillaceous limestone.
- 2140 - 2150: Limestone, pale grey and grey, micritic to very fine crystalline, silty and sandy, scattered grey, opalescent quartz and chert grit, fossiliferous minor dark grey shale and dark brown-grey argillaceous limestone, as above.
- 2150 - 2160: Shale, dark brown-grey, blocky, calcareous, trace glauconitic, trace silty. Abundant fossil shell fragments, spicules.
- 2160 - 2170: Shale, as above. Minor brown micritic to microcrystalline, fossiliferous limestone, as above.
- 2170 - 2180: As above.
- 2180 - 2190: Shale, as above. Decrease in limestone content. Fossiliferous.
- 2190 - 2200: Shale, as above. Limestone, brown-grey, micritic to microcrystalline, argillaceous, fossiliferous.
- 2200 - 2210: Shale, grey-brown, calcareous, minor interbedded brown-grey argillaceous limestone, fossiliferous, trace of glauconite.
- 2210 - 2220: Limestone, grey, brown, argillaceous, grading in part to calcareous shale. Traces fossils.
- 2220 - 2230: Limestone, as above, silty in part. Traces of fossils. Trace of pyrite.

- 2230 - 2240: Limestone, grey-brown, micritic, silty in part, very argillaceous, grading to grey calcareous shale, fossiliferous, trace of glauconite.
- 2240 - 2245: T.D. Shale, dark grey-brown and grey, trace glauconite, very calcareous, grading to dark grey-brown very argillaceous limestone. Fossiliferous.

e) Paleontological Determinations

Down to 685' - Lower Cretaceous - Microflora

685' to 573' - Indeterminate

573' to -206.5' - Paleozoic/Permian - Upper Pennsylvanian - Microflora

SECTION III - ENGINEERING SUMMARY

(a) Report of Drillstem Tests

DST #1 1,318' - 1,376' - bottom hole test  
Zone Permian Sandstone  
Times Preflow 7 min. - V.O. 45 min.  
ISI 60 min. - FSI 90 min.  
Fair air blow on preflow. Weak air blow on V.O., decreasing to faint in 45 minutes. No gas to surface.  
Recovered 330' dirty water containing soap and foam. Cl 50-75 ppm.  
Pressures IHP 424 FHP 424  
ISIP 268 FSIP 268  
IFP 71 FFP 181  
Remarks BHT - 64° F Test satisfactory

DST #2 1,629' - 1,695' - bottom hole test  
Zone Permian Sandstone  
Times Preflow 4 min. - V.O. 30 min.  
ISI 60 min. - FSI 90 min.  
Strong air blow on preflow. Good air blow on V.O., decreasing and dying in 15 min. No gas to surface.  
Recovered 878' of fluid composed of: 170' of drilling mud, 708' of slightly gas-cut muddy water.  
Pressures IHP 771 FHP 757  
ISIP 408 FSIP 409  
IFP 308 FFP 406  
Remarks BHT - 105° F Tool skidded 6' on opening. Test satisfactory.

(b) Casing Record

Conductor Pipe

26' of 23" O.D., 3/16" wall, insulated conductor pipe, with 3/4" O.D. cooling coils. 20' of 19" O.D., 3/16" wall conductor pipe, set at 45' below ground or 61' K.B.

Conductor pipe cemented with 240 sax of B.J. "coldset" permafrost cement.

Surface Casing

Ran 22 joints (716.01') of 9-5/8", 36#, J-S 3, 8rd, new, seamless, ST&C, range 2 casing landed at 733' K.B.

Cemented casing with 450 sax Type I cement, plus 2.5% CaCl<sub>2</sub>. Cement in place at 13:13 hours January 24, 1972. No returns. Cement 20' below ground. Recemented in annulus with 29 sax of Type I Portland cement and 6 sax of "coldset" permafrost cement.

No intermediate and no production casing strings were run.

(c) Bit Record

See attached Bit Record Sheet.

(d) Mud Report

Surface Hole

The 12-1/4" surface hole was drilled from 61' K.B. to 737', using stable foam as the drilling fluid. At 737' the hole was filled with a water gel mud prior to running surface casing. The following materials were used on surface:

Sulfotex Sal	3 drums
Magcogel	126 sax
Fibertex	28 sax
Sawdust	45 sax

Main Hole

The 8-3/4" main hole was drilled to 1,620' using stable foam as the drilling fluid. The hole was then displaced to a water-gel mud system which was continued throughout the remainder of the hole. The following materials were used on the main hole:

Sulfotex Sal	9 drums
Magcogel	448 sax
Caustic Soda	16 sax
Sodium Bicarb.	5 sax
CMC Rig	5 sax
Spersene	4 sax

(e) Deviation Record

108 - 1/4	446 - 1/8	1,196 - 1/2
140 - misrun	542 - 1/4	1,386 - 1/4
170 - 0	630 - 1/2	1,600 - 1/8
230 - 0	730 - 3/4	1,850 - 1/2
290 - 1/8	940 - 3/4	1,910 - 3/4
354 - 1/2	1,060 - 3/4	2,245 - 2-3/4

(f) Abandonment Plugs

Plug #1 (2,245' - 2,170') 50 sax construction cement  
Plug #2 (2,140' - 2,000') 90 sax construction cement plus 3% CaCl<sub>2</sub> Felt @ 1978'  
Plug #3 (1,400' - 1,250') 120 sax construction cement plus 3% CaCl<sub>2</sub> " " 1273'  
Plug #4 ( 780' - 680') 84 sax construction cement plus 3% CaCl<sub>2</sub> " " 534'  
Rerun Plug #4 (78' - 680') 81 sax construction cement plus 3% CaCl<sub>2</sub>  
Surface plug 5 sax construction cement

(g) Lost Circulation Zone

Although no complete or severe lost circulation occurred on this well, approximately 120 barrels of mud were lost to the Permian Sandstone formation during the drilling operations.

(h) Report of Blowouts

No blowout or kick on this well.

A formation pressure breakdown test was run prior to cement plug #4 (780' - 680') across the surface casing shoe at 733' K.B. Formation broke down at 1,400 psi and fed at 1.5 bbls. per minute at 1,000 psi. Instantaneous standing pressure at 900 psi steady for 5 minutes. Mud weight was 9.0 #/gal. and viscosity 75 sec./qt.

SECTION IV - LOGS

The following Schlumberger logs were run on February 16, 1972:

Dual Induction Laterolog	(2,236' - 732')
BHC Sonic/Gamma Ray/Caliper	(2,242' - 732')
Formation Density Compensated	(2,242' - 732')
Sidewall Neutron Porosity	(2,242' - 150')
Gamma Ray Neutron	(2,240' - 150')

24 Sidewall Cores were shot and 22 were recovered as follows:

2,134'	1,513' (B)
2,117'	1,465' (A)
2,076' not recovered	1,465' (B)
2,049'	1,440' not recovered
1,869'	1,306'
1,787'	1,275'
1,756'	1,237'
1,742'	1,158'
1,588'	1,050'
1,586'	988'
1,523'	893'
1,513' (A)	814'

SECTION V - ANALYSIS

(a) Core Analysis

Core analysis enclosed in back folder.

(b) Water Analysis

Water analysis enclosed in back folder.

(c) Gas Analysis

No gas analysis.

(d) Oil Analysis

No oil analysis.

SECTION VI - COMPLETION SUMMARY

(a) Tubing Record

No tubing run.

(b) Perforation Record

No perforations

(c) Cementation Record

Abandonment Plug #1 (2,245' - 2,170')

Cemented with 50 sax construction cement. Cement in place at 2:00 hours February 19, 1972. No feel for plug #1.

Abandonment Plug #2 (2,140' - 2,000')

Cemented with 90 sax construction cement plus 3% Ca Cl<sub>2</sub>. Cement in place at 03:05 hours February 19, 1972. Felt plug #2 at 1,978' at 11:15 hours February 19, 1972 after 8 hours WOC.

Abandonment Plug #3 (1,400' - 1,250')

Cemented with 120 sax construction cement plus 3% CaCl<sub>2</sub>. Cement in place at 13:40 hours February 19, 1972. Felt plug #3 at 1,273' at 22:00 hours February 19, 1972 after 8 hours WOC.

Abandonment Plug #4 (780' - 680')

Cemented with 84 sax construction cement plus 3% CaCl<sub>2</sub>. Cement in place at 00:30 hours February 20, 1972. Felt plug #4 at 534' at 09:30 hours February 20, 1972. Plug too high. Drilled out plug #4 and recemented with 81 sax of construction cement plus 3% CaCl<sub>2</sub>. Cement in place at 22:25 hours February 20, 1972. Felt rerun plug #4 at 640' at 08:00 hours February 21, 1972.

Surface Plug

Cut off casing at original ground level and cemented top of casing with 5 sax of cement. Welded on casing plate and well identifier sign.

(d) Acidization and Fracturing Record

No acidizing of fracturing operations.

(e) Back Pressure and Production Tests

No back pressure or production tests.

CHEVRON STANDARD LIMITED

BIT RECORD

CHEVRON SOBC WM

WELL NAME BIRCH YTE-53

CONTRACTOR G. P

RIG No. 24

PUMP No 1 D-500

SPUD DATE JAN. 20, 1972

RIG RELEASED FEB 21, 1972

DRILLING DAYS 32

PUMP No 2 C-250

BIT No.	MAKE	SIZE	TYPE	DEPTH		FOOTAGE	TIME	DRLG. RATE	NOZZLE SIZES	JET VEL	WEIGHT M #	RPM	No. 1 PUMP		No. 2 PUMP		PUMP PSI	HHP AT BIT	DP ANN.	DC ANN.	MUD		DUBL COND.			DEV.		
				FROM	TO								LINER	SPM	LINER	SPM					WT.	VIS.	T	B	G			
1S	HW	12 1/4	osc-3	61	737	676	39 3/4	17	2-16 1-15		8-10	100	Foam	300 cfm	15 gpm	150 psi								5	3	I	3/4	
1	HW	8 3/4	XDV	737	1331	594	41	14.4	3-22		10-12	100	Foam	300 cfm	15 gpm	200 psi								2	4	I	1/2	
1C	will	8 1/16	◇	1331	1340	9	3 1/2	2.6	-		12-15	50-58	Foam	300 cfm	18 gpm	250 psi												
RR 1C	will	8 1/16	◇	1340	1368	38	10 1/4	3.6	-		12-15	50-58	Foam	300 cfm	18 gpm	250 psi												DAMAGED.
2C	West.	6 3/16	◇	1368	1374	6	2	3	-		10	40-50	Foam	300 cfm	18 gpm	260 psi												DAMAGED.
2	EEC	8 3/4	S-88	1374	1376	2	1/2	4	3-22		8-10	80	Foam	300 cfm	18 gpm	250 psi								1	1	I		
RR 2	Sec	8 3/4	S-88	1376	1426	50	5 1/2	9.5	3-22		8-10	55	Foam	300 cfm	18 gpm	250 psi								1	1	I		
3C	West.	6 3/16	◇	1426	1430	4	1 1/4	3.2	-		4-6	55	Foam	300 cfm	18 gpm	250 psi												DAMAGED.
RR 2	Sec	8 3/4	S-88	1430	1511	81	6 1/4	13	3-22		10	100	Foam	300 cfm	18 gpm	250 psi								1	1	I	1/4	
4C	West	6 3/16	◇	1511	1513	2	1	2	-		2-6	50	Foam	300 cfm	18 gpm	250 psi												DAMAGED.
RR 2	Sec	8 3/4	S-88	1511	1620	109	9 1/2	11.3	3-22		8	50	Foam	300 cfm	18 gpm	250 psi								2	2	O	1/8	
3	HW	8 3/4	XDV		1620	-	14 1/4	-	3-13				Run to mud up & clean out hole.									8.9	90					
5C	West	6 3/16	◇	1620	1677	57	16 1/4	3.5	-		5-8	30-44	5 1/2	54		900							9.0	75			GOOD	
RR 3	HW	8 3/4	XDV	1677	1701	24	2 3/4	8.75	3-13	270	25	60-65	5 1/2	63		950							9.0	75			4.1 O	
4	Sec	8 3/4	S-88	1701	1808	106	8	13.3	3-14	250	25	40	5 1/2	66		850							9.2	70			1.1 I	
RR 5C	West	6 3/16	◇	1807	1830	23	9	2.5	-		8	75	5 1/2	45		800							9.2	70			GOOD.	
5	HW	8 3/4	XDV	1830	1910	80	17 1/4	4.5	3-13	270	25-30	40-50	5 1/2	60		900							9.2	70			7.1 I 3/4	
6	Sec	8 3/4	S-88	1910	2245	335	54 1/4	6.1	3-14	240	25-30	45-50	5 1/2	64		900							9.2	70			2.2 I 2 3/4	